Assessing the integrity of the shoulder & supraspinatus tendon post operatively – common pitfalls

ASA Virtual Conference
SYDNEY

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Pre – operative appearance

- Supraspinatus tendon - y/n
- Partial thickness tear % – location
  - Bursal side
  - Undersurface
- Full thickness tear
- Full thickness tear with retraction/supraspinatus muscle belly
- **Distance from the biceps**
- Instability
- ACJ
- GHJ arthritis
- Cuff arthropathy
Why is pre-operative tear size important?

- Type of surgery required –
  - Rotator cuff repair
  - Patch repair - ePTFE
  - Total shoulder replacement
  - Reverse TSR

- Predictive re-tear
Surgical procedure
Post operative assessment

- Assess the integrity of the supraspinatus tendon
- Demonstrate continuation of fibres
- Note sutures within the tendon
- Note the footprint insertion of the repair
Comment on….

- Tendon – normal post operative appearance
- Normal tendon architecture
- Note sutures within the tendon
- Anchor position
- Biceps – effusion y/n
- ROM – abduction
- Supraspinatus muscle activation
- Impingement – y/n
Normal post op appearance

RIGHT SUPRASPINATUS
Normal post op appearance
Abnormal post-operative appearances

- Discontinuation of fibres
- Hypo-echoic cleft
- Scarring
- Thinning
- Full thickness tear
- Fatty infiltration of muscle - deltoid
Re-tear post op
Fatty infiltration of the Deltoid
Patch identification

- PTFE patch – Gortex, measures approximately 2mm in thickness
- Used in “irreparable” rotator cuff tears
- Acts as a “bridge”

- Anchored at the footprint with a suture/anchor system
- “sown” into the musculo-tendinous junction of the supraspinatus muscle belly
X ray assessment
Post op PTFe patch
Post operative patch assessment

- Patch/bone attachment – any evidence of scarring/repair
- Footprint
- Patch/tendon interface
- Activation/function in abduction
RIGHT SHOULDER
POST OP 3.5 YRS
PATCH/TENDON
Normal post-operative ultrasound findings

- Bicipital sheath effusion – decreases over time
- PD Flow noted within the tendon at the anchor site at 7 days
- No colour within the tendon after 14 days
- "bursal" thickness – bursal impingement in abduction
- Restricted ROM post surgery

PAIN
Complications of rotator cuff repair

- ROM –
- Frozen shoulder – however > 1% re-tear rate so……..
- POSITIVE result

- Mechanical impingement –peri-scapular fatigue
- Re-tear
- Loose anchor
Loose anchor
Normal post-operative ultrasound appearances of the supraspinatus tendon...

- Normal tendon identified at the insertion (footprint),
- Continual bright echogenic fibres noted
- Sutures noted within the tendon itself
- Anchor sites noted at the bony attachment
- Scarring

- **Functional assessment**
  - Abduction
  - Active activation of the supraspinatus muscle belly in abduction
Abnormal post-operative appearances of the supraspinatus tendon

- Tendon “thinned”
- Presence of a “hypo-echoic cleft” –
- Full thickness re-tear - no evidence of tendon – flat line, suture material not identified
- If a re-tear is demonstrated note size in both the coronal and longitudinal plane. If there is evidence of a “focal” re-tear note size and position with respect to the anchor

- Re-scan all patients that present with these post-operative changes in 3-6/12
Hypo-echoic cleft

Patients with large cleft (>=36 mm²) were 5x more likely to develop further into retear in long-term compared to those with small cleft.
Thinned post op supraspinatus
Failed patch

HUMERUS
GLENOID
RIGHT SHOULDER
PATCH/BONE
6/12 POST OP_
Normal post operative rotator cuff symptoms include:

- The tendon may appear to be heterogenous in its echotexture
- Pain
- Restricted ROM – differentiate between post operative frozen shoulder/impingement
- Presence of a Bicipital sheath effusion
Published papers relating to this topic.

Thank you